Bearly Growing

Objectives

Students will compare similarities and differences between the growth of black bears and humans.

Method

Students illustrate, compute, and graph differences between people and black bears at various stages of maturity.

California Standards

Language Arts: Listening and Speaking 1.1, 1.2
Science: Life Science 3 a, b, c; Investigation 6 b, c, e

Background

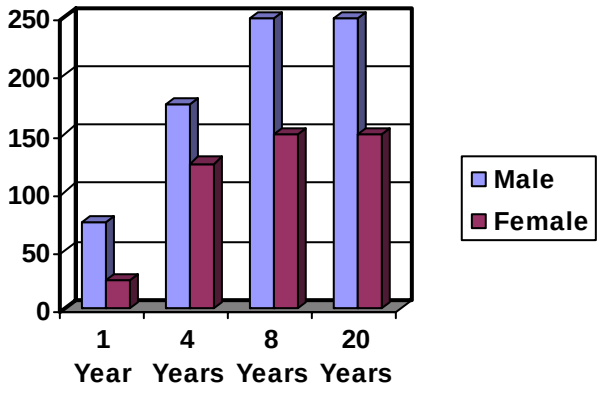
See *Black Bear Biology* on page 9.

Procedure

1. Begin a discussion with the students about black bears. Distribute "Black Bear Biology" and "Compare Yourself to a Black Bear." Have the students use the information on Black Bear Biology to help them complete the chart.
2. Ask students for their ideas about how long sows are pregnant, what bear cubs eat when they are born, how much they might weigh when they are a year old, how many cubs might be born at the same time, how much they weigh when they are full grown, and how long they live.
3. Following the discussion, post the weight and age relationships for black bears or provide a handout.

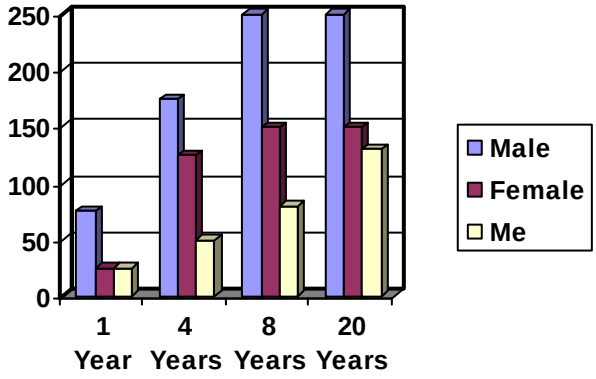
(Data are characteristic of black bears in the southwestern United States. There will be regional variations.)

Age and Weight of Black Bears



4. Ask the students to plot their own weight at the same ages as the black bears shown on the chart. They will be required to estimate for years past their present age. Ask the students to graph both sets of data.

Age and Weight of Black Bear and Student



5. Ask the students to compute the following, and include their results with their graph and drawing:
   a. How much weight did the black bear gain at each interval: from birth to 4 months, 4 months to 1 year, etc.?
   b. How much weight did you gain during the same intervals?
   c. How many times more weight did the bear gain during each period?
6. In discussion, ask the students to comment on the similarities and differences between bears and people.

Extensions

1. Researchers can estimate the weight of a bear by measuring the bear's girth (the distance around a bear's chest). Given the following data, students can measure the girth of a boy's chest and estimate how much he would weight if he were a black bear.

Girth in inches = Pounds	
22	50
30	100
35	150
39	200
45	300
52	400

Have a few boys volunteer to weigh themselves and measure their chest girths. Graph or chart their weights and girths. Graph or chart the weights and girths of black bears. Weigh and measure the girth of older students, teachers, and family members. Graph or chart the results. Possible questions for discussion include:

a. Using the weight and age relationship for black bears, how much does a 4-year-old, a 10-year-old, a 20-year-old bear weigh per inch of girth?

b. How much do various age groups of children weigh per inch of girth of their chest?

c. Are bears or children heavier per inch of chest girth? How about adults compared to bears?

2. Calculate how fast a given bear population, if unchecked by limiting factors, can increase over a specific period of time, assuming that a sow will have two cubs (one of each sex) in her fifth year of life. The total time frame is 10 years, from July 1 to June 30. The initial bear population is one 5-year-old boar and two 6-year-old sows, one with 2 cubs. Graph or chart the results.

Aquatic Extension

Identify various species of aquatic wildlife. Find out the average life span of each organism, how much it weighs at birth, and how much it weighs at maturity.

Evaluation

1. Use the data in Table A to construct a graph that compares the growth of catfish from Lake Erie and the growth of catfish from the Ohio River.

   a. Which catfish grew the most between the ages of 4 and 5 years?

   b. How much larger is the Ohio catfish at 9 years of age than it is at 1 year of age?

Catfish in Lake Erie and the Ohio River

Table A (size in mm)	1 yr	2 yrs	3 yrs	4 yrs	5 yrs	6 yrs	7 yrs	8 yrs	9 yrs
Lake Erie catfish	69	115	160	205	244	278	305	336	366
Ohio River catfish	56	101	161	227	285	340	386	433	482

Compare Yourself to a Black Bear Answer Key

6 feet
150 to 300 pounds
50 to 70 pounds
8 ounces
1 to 4 cubs
18 months
20 to 25 years

Activity _____ **Black Bear Biology** _____

The black bear (*Ursus americanus*) can be found in the United States, Canada, and Alaska. In the east, the black bear primarily inhabits forests and swamps. In the west, the black bear roams chiefly in mountainous areas.

A black bear's life span averages 20 to 25 years. Longevity and survival of the black bear depend upon the availability of a suitable habitat and its ability to avoid humans. An adult female bear is called a sow. An adult male bear is called a boar. A baby bear is called a cub. When a sow becomes sexually mature between 2 and 3 years old, she is capable of breeding and may have one to four cubs.

The sow has her cub or cubs in the shelter or den where she spends the winter months. On average, a female black bear will have two cubs. The sow does not have a litter every year, but every other year. At birth, a young cub weighs about 8 ounces—about the size of a guinea pig. Bear cubs stay in the den with their mother until they are able to move around very actively, usually until late April or early May.

Bears and humans are classified as mammals, which means that both are warm-blooded, nourish their young with milk, and are covered with varying amounts of hair. Bear cubs and humans survive solely on their mother's milk for the first few months of life. Cubs nurse while in the den and only for a short time after leaving the den in early spring. By the time berries ripen and grasses are plentiful, the cubs have learned to climb and can eat the available food sources. Soon the cubs will need to hunt and gather food for themselves without the help of the sow. At about 18 months of age, the cubs must go out searching for their own home range. The sow will allow the female cubs to stay adjacent to her home range. The male cubs, however, must find territory to claim as their own.

Black bears are omnivores, which means they eat both plant and animal material. In early spring, they tend to eat wetland plants, grasses, insects, and occasionally carrion (dead animal matter) or the protein-rich maggots found near the carrion. In late spring and early summer, bears feed on berries, grubs, and forbs (broad leafed plants). In late summer and early fall, bears feed mostly on nuts and acorns. In the fall season, bears must add much fat to their bodies in order to survive the winter months in their dens. Cub growth will vary throughout the country.

When black bear cubs reach one year of age, the female cubs weigh 30 to 50 pounds and the males weigh 50 to 70 pounds. A mature female bear weighs 100 to 200 pounds, and a male bear weighs 150 to 300 pounds.

(Sources: *Arkansas Black Bear: A Teacher's Guide for Kindergarten Through Sixth Grade*, Arkansas Game and Fish Commission; *WILD About Bear*, ID Dept of Fish and Game; *A Field Guide to the Mammals*, Houghton Mifflin Co., 1980).

Compare Yourself to a Black Bear

The average height of an adult male black bear standing upright:		Your height:	
The weight of an adult male black bear:		Your weight:	
The average weight of a 1-year-old male black bear:		Your weight at 1 year of age:	
The average birth weight of a black bear cub:		Your birth weight:	
The average number of cubs that a black bear has per litter:		Average number of babies your mom had at one time:	
The length of time a cub stays with its mother:		Number of years you probably will stay at home:	
The range of a black bear's life span:		Average person's life span:	